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INSTRUCTION MANUAL

pHTestr 10, 20, 30, 10BNC, Spear

Large Screen
Waterproof pH / Temperature Testr
Double Junction

Introduction
Thank you for selecting our waterproof pH Testr. This manual serves the following (5) models:
- pHTestr 10 (Eutech PHTEST10 / 01X366901 / Oakton 35634-10)
- pHTestr 20 (Eutech PHTEST20 / 01X366902 / Oakton 35634-20)
- pHTestr 30 (Eutech PHTEST30 / 01X366903 / Oakton 35634-30)
- pHTestr 10BNC (Eutech PHTEST10BNC 01X366904 / Oakton 35634-14)
- pH Spear (Eutech PPHSPEAR 01X366920 / Oakton 35634-40)

This manual provides a step-by-step guide to operate the Testrs.

Before you begin:
Condition your pHTestr 10, 20, 30 electrodes by immersing it in electrode storage solution or tap water for at least 30 minutes before use. DO NOT use de-ionized water.

Ensure that your pHSpear electrode is always soaked in the electrode storage solution or tap water via its protective cap.

Note: For pHTestr10BNC, please refer to the pH electrode's instruction manual.

pH Buffer Set Selection
Your Testr features USA (pH 4.01, pH 7.00 and pH 10.01) or NIST (pH 4.01, pH 6.86, and pH 9.18) standards. Select either one to suit your requirements.
1. While pressing the HOLD/ENT button, switch on the Testr by pressing the ON/OFF button.
2. Release the HOLD/ENT button. The display will flash either USA or NIST.
3. Press CAL button to toggle between the two buffer set standards.
4. Press the HOLD/ENT button to confirm the selection of the buffer set.

With meter powered off, press HOLD/ENT and ON/OFF at the same time. First release ON/OFF button, then HOLD/ENT button.

After buffer selection, whole LCD segment lits up and goes back to measurement mode.

Figure 1: Buffer Selection Sequence

pH Calibration
Calibration should be done regularly, preferably once a week. You can calibrate up to three points using either the USA or the NIST buffer set standards.
1. Press ON/OFF button to switch unit on.
2. Dip electrode about 2 to 3 cm into the pH standard buffer solution.

3. Press the CAL button to enter calibration mode. The 'CAL' indicator will be shown. The upper display will show the measured reading based on the last calibration while the lower display will indicate the pH standard buffer solution.

Note: All Testrs have dual display during calibration mode
Note: To abort calibration, press the 'CAL' button.

4. Allow about 2 minutes for the Testr reading to stabilize before pressing the HOLD/ENT button to confirm the first calibration point. The upper display will be calibrated to the pH standard buffer solution and the lower display will then be toggling in between readings of the next pH standard buffer solution.
5. Repeat with other buffers if necessary. Rinse electrode in tap water before dipping into next buffer.

Note: The calibration mode allows you to perform up to three calibration points before returning to the measurement mode automatically. However, if you opted to have only one or two calibration points, simply skip the remaining calibration points by exiting to the measurement mode by pressing the CAL button.
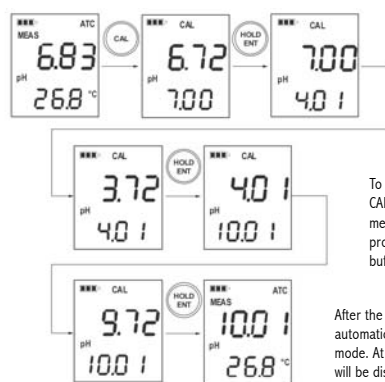
To do a 1 point calibration only, press CAL button at this point to exit to the measurement mode. Otherwise, proceed to second buffer for a second buffer for a second point calibration.

To do a 2 point calibration only, press CAL button at this point to exit to the measurement mode. Otherwise, proceed to third buffer for a third buffer for a third point calibration.

After the third point calibration, the meter will automatically return to the measurement mode. At any point, an error message 'Er. 1' will be displayed momentarily if the confirmed pH value is not within the pH calibration window.

Figure 2: Example of pH Calibration Sequence

pH Measurement
1. Press the ON/OFF button to switch the Testr on.
2. Dip the electrode about 2 to 3 cm into the test solution. Stir and let the reading stabilize. For semi-solid samples using pHSpear, rotation is ideal for sample contact. CAUTION: Testing dry samples is not accurate and can lead to sensor damage or breakage. Soils must be wet and free of particulates that may scratch the glass sensor. Excessive force into dry samples can cause glass breakage.
3. Note the pH value or press HOLD/ENT button to freeze the reading. To release the reading, press HOLD/ENT again.
4. Press ON/OFF to turn off Testr. If you do not press a button for 8.5 minutes, the Testr will automatically shut off to conserve batteries.

HOLD Function
This feature lets you freeze the display for a delayed observation
1. Press HOLD/ENT button to freeze the measurement. A 'HOLD' indicator will be displayed and the measurement will be frozen.
2. Press HOLD/ENT again to release the measurement. The 'HOLD' indicator will not be displayed anymore indicating the held measurement is released.

Figure 4: Example of HOLD Function

User Reset
You can reset the pH calibration to the factory default by using the user reset function. Buffer set selection and temperature user calibration (pHTestr30) are not affected by the user reset function.
1. Switch off the Testr.
2. While pressing the 'CAL' button, press and release the ON/OFF button to enter the 'User Reset' selection menu. The screen will display 'rSt' on the bottom display with a flashing 'n0' selection.
3. Use the 'CAL' button to toggle between 'n0' and 'YES' selection.
   - n0 deactivates reset selection
   - YES activates the reset selection
4. Press the HOLD/ENT button to confirm the selection made.
5. If you have selected 'YES', the unit will show 'CO' momentarily and proceed to the measurement mode with the calibration reset back to factory default value.
6. If 'n0' is selected, the unit will proceed to the measurement mode without any calibration reset performed.
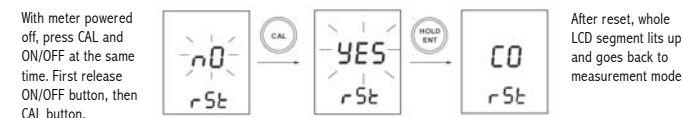
With meter powered off, press CAL and ON/OFF at the same time. First release ON/OFF button, then CAL button.

After reset, whole LCD segment lits up and goes back to measurement mode.

Figure 5: User Reset Sequence

ATC - Automatic Temperature Compensation
(Only for pHTestr 10, pHTestr 20 and pHTestr 30)
Through its in-built temperature sensor, the measurement error due to the changes in electrode sensitivity due to changes in temperature is compensated to give the actual pH reading of the sample measured.

MTC - Manual Temperature Compensation
(Only for pHTestr 10BNC, pH Spear)
The MTC range is 0 to 50.0 °C (32.0 to122.0 °F). User reset will set temperature to default value 25°C or 77°F.

While in the measurement mode,
1. Press the HOLD/ENT button to bring the Testr to the 'HOLD' mode.
2. Press the CAL button continuously to switch to the °C or °F mode setting selection screen.
3. Release the CAL button to confirm your mode selection and the display will go to the manual temperature calibration mode with the upper display flashing. The upper display shows the adjustable temperature value and the lower display shows the last set temperature offset.
4. Press the HOLD/ENT button to set the upper display to the temperature value of your sample.
5. Once the setting is reached, release the HOLD/ENT button. The new value is automatically confirmed and returns to the measurement mode if no button is pressed after 5 seconds.

Notes: To exit this program without confirming the calibration, press the CAL button before the automatic confirmation takes place.

Temperature Calibration (Only for pHTestr 30)

From the measurement mode,
1. Press the HOLD/ENT button to bring the Testr to the 'HOLD' mode.
2. Press the CAL button for 3 seconds to switch to the °C or °F mode setting selection screen. Pressing the CAL button continuously for 3 seconds allows you to toggle in between the °C and °F mode setting selection screen.
3. Release the CAL button to confirm your mode selection and the display will go to the temperature calibration mode with the upper display flashing. The upper display shows the current measured temperature reading based on the last set offset and the lower display shows the current measured temperature reading based on factory default calibration.
4. Dip the Testr into a solution of known temperature and allow time for the in built temperature sensor to stabilize.
5. Press the HOLD/ENT button to set the upper display to the temperature value of the solution.
6. Once the new temperature setting is reached, the new value is automatically confirmed and returns to the measurement mode if no button is pressed after 5 seconds.

Notes: To exit this program without confirming the calibration, press the CAL button before the automatic confirmation takes place.
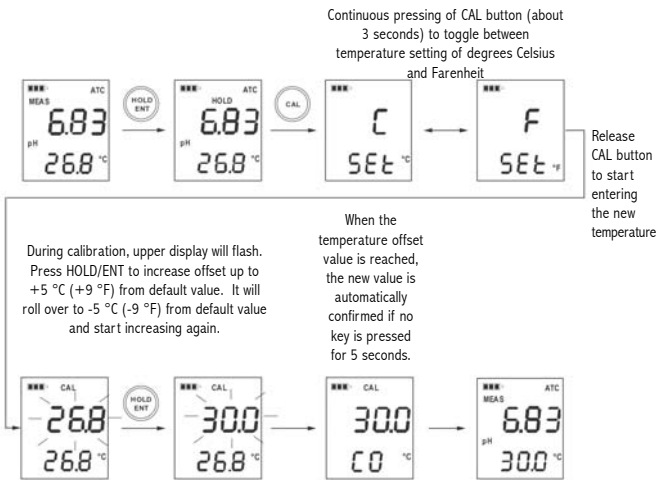
Continuous pressing of CAL button (about 3 seconds) to toggle between temperature setting of degrees Celsius and Farenheit

Release CAL button to start entering the new temperature

During calibration, upper display will flash. Press HOLD/ENT to increase offset up to +5 °C (+9 °F) from default value. It will roll over to -5 °C (-9 °F) from default value and start increasing again.

When the temperature offset value is reached, the new value is automatically confirmed if no key is pressed for 5 seconds.

Figure 6: Temperature Calibration Sequence (Only for pHTestr 30DJ)

Electrode Maintenance
1. Before measuring soil pH with the pHSpear, wet your soil sample with distilled water and ensure that the soil is free of particulates. Even though the pHSpear is ruggedized, hard surfaces such as stones and pebbles can still cause breakage.
2. Rinse the electrode with tap water or electrode storage solution after each measurement. Care has to be taken not to damage the sensor's glass electrode especially while rinsing the pHSpear penetrating tip electrode.
3. In aggressive chemicals, dirty or viscous solutions, and solutions with heavy metals or proteins, take readings quickly and rinse electrode immediately afterward. For the pHSpear, the remnants of the semi solid samples on the penetrating electrode can be removed by rubbing it with some table salt and then rinsing. Mild detergent can be used to wash the penetrating electrode clean.
4. If possible, keep a small piece of paper or sponge in the electrode cap — moistened with clean water or electrode storage solution (NOT de-ionized water) — and close the cap over the electrode. For pHSpear, ensure that the electrode is kept soaked in electrode storage solution or tap water via its protective cap.

Changing Batteries
1. Open battery compartment lid (with attached lanyard loop).
2. Remove old batteries; replace with fresh ones. Note polarity
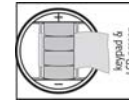
Self-Diagnostic Messages

Low battery indicator	▮▮▮	3 Bars indicates Battery is full (100%)
	▮▮	2 Bars indicates 50% of the battery life is left
	▮	1 Bar indicates 25% of the battery life is left
	(blinking)	Blinking battery casing indicates the need to replace batteries with fresh ones as specified by manufacturer
Over range / Under range signal	Or / Ur (Still)	Electrode is not in contact with solution or electrode is failing.
		Replacement sensor is not connected properly to the tester during sensor replacement
		Measured pH value or temperature value (pHTestr30) exceeds its specified maximum or minimum value
	ATC / Or / Ur (Blinking)	Blinking 'ATC', 'Or' or 'Ur' indicates that there is a short or open circuit at the built in temperature sensor
Error Message	Er.0	Temperature calibration error of attempting to calibrate tester to a value which is out of range or under range
	Er.1	pH calibration error of attempting to confirm a calibration value which is not within the specified calibration window

Electrode Replacement

You can replace the electrode module at the fraction of the cost of a new Testr. When the tester fails to calibrate or gives fluctuating readings in calibration standards, you need to change the electrode.
1. With dry hands, grip the ribbed Testr collar with electrode facing you. Twist the collar counter clockwise (see picture A). Save the ribbed tester collar and O-ring for later use.
2. Pull the old electrode module away from the Testr.
3. Align the four tabs on the new module so that they match the four slots on the Testr (see picture B).
4. Gently push the module onto the slots to sit it in position. Push the smaller O-ring fully onto the new electrode module. Push the collar over the module and thread it into place by firmly twisting clockwise.

Note: It is necessary that you recalibrate your Testr prior to measurement after an electrode replacement.
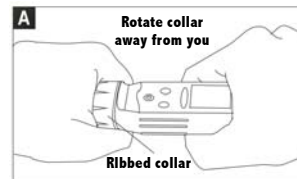

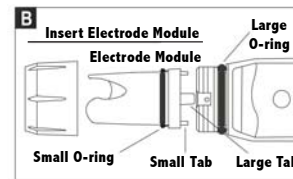*Figure 7: Removal of collar from tester*

Figure 8: Example of electrode module fitting alignment

Applications
Water quality testing • pools • spas • aquariums • aquaculture • hydroponics • ecology studies • water and wastewater treatment • boilers • steam generators • car washes • sanitation plants • labs • food sectors and more!

Warranty
The waterproof Testrs are warranted to be free from manufacturing defects for 1 year and electrode module for 6 months, unless otherwise specified. If repair, adjustment or replacement is necessary and has not been the result of abuse or misuse within the time period specified, please contact your local distributor for assistance.

Return of Items
Authorization must be obtained from your distributor before returning items for any reason. When applying for authorization, please include information regarding the reason the item(s) are to be returned.

Note: We reserve the right to make improvements in design, construction and appearance of products without notice. Prices are subject to change without notice.

Accessories

Item	Eutech Instruments Order Code	Oakton Instruments Order Code
pHTestr 10,20,30 replacement sensor	PHSENSOR03DJ	35624-38
pHSpear replacement sensor	PHSENSOR04	35634-50
Carrying Pouch pH Testr 10, 20, 30	ECPOUCH01	35624-45

Tester Specifications

Large Screen Testrs	pHTestr10	pHTestr20	pHTestr30	pHTestr 10BNC	pHSpear
pH Range	-1.0 to 15.0 pH	-1.00 to 15.00 pH			
Resolution	0.1 pH	0.01 pH			
Relative Accuracy	0.1 pH	0.01 pH			
Calibration Points	Up to 3 points	Up to 3 points			
Buffer Set Standard Selection	USA - 4.0/7.0/10.0 NIST - 4.0/6.9/9.2	USA - 4.01/7.00/10.01 NIST - 4.01/6.86/9.18			
Calibration Window (USA Buffer Set Standard)	+/-1.0 pH (pH 4.0 & pH 10.0), +/-1.5 pH (pH 7.0)	+/-1.00 pH (pH 4.01 & pH 10.01), +/-1.50 pH (pH 7.00)			
Calibration Window (NIST Buffer Set Standard)	+/-1.0 pH (pH 4.0 & pH 9.2), +/-1.2 pH (pH 6.9)	+/-1.00 pH (pH 4.01 & pH 9.18), +/-1.25 pH (pH 6.86)			
Temperature	No Display	0-50.0°C or 32.0-122.0°F			
Temperature Compensation	ATC				MTC
Temperature Resolution	No	0.1 °C / °F			
Temperature Accuracy	No	0.5 °C / 0.9 °F			No
Temperature Calibration Window	No	+/- (5°C /9 °F) from default value	0-50.0°C or 32.0-122.0°F (MTC)		
Auto Off	After 8.5 minutes from last key press				
User reset	Yes				
Non Volatile Memory Backup	Yes				
LCD Display	Dual				
Power Requirement	4 x 1.5V "A 76" micro Alkaline Batteries				
Battery life	More than 500 hrs				
Operating Temperature	0 – 50 °C				
Tester Dimensions	6.5 "L x 1.5"dia. (165 x 38 mm)				9.75 "L x 1.5"dia. (247 x 38 mm)
Weight	3.25 oz (90 gm)				
Penetrating electrode total length	Not applicable				91 mm
Shaft length	Not applicable				31 mm
Penetrating electrode upper diameter	Not applicable				12 mm
Shaft diameter	Not applicable				7 mm